

REMARKS/ARGUMENTS

In response to the Office Action dated March 31, 2011, Applicants amend their application and request reconsideration. In this Amendment claims 4 and 13 are cancelled and new claim 15 is added so that claims 1, 2, 5-11, 14, and 15 are now pending.

Information Disclosure Statement

Applicants understand the comment appearing at page 2 of the Office Action to state that publications mentioned solely in the specification have not been considered by the Examiner unless listed on a PTO-892 form. Applicants understand that the publications previously submitted in an Information Disclosure Statement, for which the PTO-1449 statement has been returned with the Examiner's name, have been fully considered.

An additional Information Disclosure Statement citing and supplying a copy of a Japanese language publication (with an English language abstract) mentioned in the specification is supplied. An indication of consideration of the cited publication in the next communication is respectfully requested.

Formality Rejection

The examined claims were rejected as omitting from claim 1, the sole pending independent claim, elements that the Examiner considered essential to the invention. Claim 1 has been clarified, consistent with the specification. In the claimed acid leakage detector, when the liquid acid being detected reaches the electrically insulating material, some of that electrically insulating material is dissolved. The electrically insulating material establishes electrical insulation between the first and second conductive members. As explained in the amended claim, when the acid dissolves at least some of the electrically insulating material, the insulation between the first and second conductive members, provided by the electrically insulating

material, is reduced. In other words, when a voltage is impressed across the first and second conductive members, the electrical insulation between those members decreases upon the dissolution of at least some of the electrically insulating material. In response to the reduced insulation, an increased current flows between the first and second conductive members, resulting in indication of the presence of the liquid acid, thereby indicating leakage of that liquid acid.

Although the dissolution of the electrically insulating material was described in examined claim 1, the improved clarity of claim 1 overcomes the rejection by explaining that it is the solubility of the electrically insulating material that provides the indication for detecting the presence of the liquid acid. Accordingly, the rejection as to form should be withdrawn.

Status of Claims

Although many examined claims were rejected over prior art, as discussed below, claims 5-10, 13, and 14 were stated to be allowable if rewritten in independent form. In this Amendment claims 7 and 8 are rewritten in independent form, based upon the clarifying amendment of claim 1. Therefore, those claims 7 and 8, and their dependent claims 9 and 14, are allowable and should be immediately allowed. Likewise, it is understood that claims 5-10 and 14 remain allowable although not rewritten in independent form. No further comment is made with respect to the claims that are now allowable.

In this Amendment, in addition to the clarification of claim 1, claims 1 and 4 have been combined as amended claim 1. Claim 4 is, therefore, cancelled. Claim 13 became redundant as a result of this amendment and is, therefore, cancelled. New claim 15 depends from claim 1 and is based upon the description appearing in the patent application as filed in the paragraph beginning on page 8 in line 28 and continuing onto page 9.

Prior Art Rejections

Claims 1, 2, and 4 were rejected as anticipated by Takahashi et al. (U.S. Patent 4,918,977, hereinafter “Takahashi”) and claim 11 was rejected as unpatentable over Takahashi, considered by itself. These rejections are respectfully traversed.

Response to Prior Art Rejections

In rejecting claims 1, 2, and 4, now claims 1 and 2, as anticipated by Takahashi, the Examiner pointed out that when an invention employs a material that is identical to a material described in the prior art, then it is proper to presume that the material recited in the claim has the same properties as the prior art material. Applicants agree. However, the electrically insulating material of the claimed liquid acid leak detector is not the same material described by Takahashi. The material of the claimed detector includes a macromolecular compound having repeating units derived from a monomer component having a basic functional group and in which that basic functional group includes at least 10% of all of the repeating units of the macromolecular compound. The macromolecular compound described by Takahashi is a polyester polymer.

The macromolecular compound employed in the invention is a radically polymerized polymer. Polyester is not radically polymerized, leading to different characteristics of the compounds encompassed by claim 1 and the polyester polymer described by Takahashi. Takahashi explains at column 1, lines 63-65, that the insulator employed in his liquid leakage detector line, while made of a macromolecular material, is a resin prepared by polycondensation of polybasic organic acids and polyhydric alcohols.

Further, according to column 2, lines 7-11 of Takahashi, the insulator dissolves when in contact with a strong acid or a strong alkali liquid. Since the Takahashi polyester polymer dissolves in response to both acidic and alkaline solutions, that

polymer must be hydrolyzed in response to contact by the strongly corrosive liquids. By contrast, radically polymerized polymers, as in claim 1, do not include hydrolysable groups. Since the material employed in the invention cannot be hydrolyzed, it is contrary to Takahashi's objective of detecting leakage of both acids and bases. The claimed detector can detect only acids. This difference additionally demonstrates that Takahashi cannot anticipate claims 1 and 2 as presented here.

The inventors additionally point out that Tables 1 and 2 of Takahashi demonstrate that Takahashi's detector cannot detect relatively dilute sulfuric acid, such as is employed in lead/acid batteries. By contrast, a sensor according to claim 1 readily detects dilute sulfuric acid as described, for example, in Examples 8-14 and Table 2 at page 44 of the present patent application. Further, the greater sensitivity of the sensor according to the invention, as compared to the Takahashi sensor, means that the novel sensor more quickly detects the presence of an acidic liquid than does the Takahashi sensor. These further distinctions prevent anticipation of any pending claim by Takahashi.

Upon the withdrawal of the rejection for anticipation of claim 1, the anticipation rejection of dependent claim 2 must likewise be withdrawn.

The rejection of claim 11 as obvious over Takahashi, considered by itself, is founded upon the assertion that claim 1 is anticipated by Takahashi. For the reasons provided in the foregoing paragraphs, the rejection for anticipation is erroneous. Therefore, upon withdrawal of the rejection of claim 1, the rejection of claim 11 must be withdrawn.

Conclusion

Reconsideration, withdrawal of the rejections made with respect to claims 1, 2, 4, and 11, and allowance of all pending claims are earnestly solicited.

Respectfully submitted,

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JAW:yes